

U.S. IOOS Advisory Committee
Report of Recommendations to NOAA and the IOOC
DRAFT: NOT FOR DISTRIBUTION OUTSIDE OF IOOS AC

Highlighted Sections will be emailed out prior to March Public Meeting

Executive Summary

- A. Charge of this Committee
- B. Overview of three priority areas
- C. Goal statement, e.g. “advancing integration across the Enterprise”

Introduction

*Note: This section can be thought of as “Education for the new Administration” - and can incorporate a lot of the history about why integration of ocean obs is so important, why IOOS was first established, and where we are today. This will put all the recommendations into context, and also **allow them to consider advancing operational ocean obs as a part of their “legacy” during their term.***

- A. History and Development of IOOS Enterprise
- B. IOOS Act: Intent and Vision
- C. Current State of the Enterprise

Vision and Strategy for the Future

While the IOOS Enterprise has a current (2018-2021) Strategic Plan, the Advisory Committee deliberated in areas that will help define the roadmap to move the IOOS Enterprise will move into the future. This includes how specifically it develops and mature; how the various components (local, regional, national) fit into a broader framework; and how to align with national priorities. Below are recommendations on how to move forward.

Develop a clear and concise plan for a Smart Coastal Ocean

Marine technology is evolving rapidly and a 5 (or 10) year plan needs to be developed to systematically replace aging infrastructure with newer, advanced, and often cheaper and better technologies. To complement the hardware, the plan should also include the transfer of older data tools to modern tools such as Cloud Storage, Machine Learning, and Artificial Intelligence to address the needs of the Regional Associations, extending from estuaries to the EEZ. This would reflect NOAA's overall technology initiatives to weave in omics, unmanned systems, AI etc.

Ensure Sustained Observations

Long-term data are invaluable in establishing baselines and must be maintained in all regions. The data collected through the Regional Associations quantify coastal climate variability in addition to other changes that occur in the nexus between land and the deeper ocean. Sustained observations are also assimilated into climate and weather models and are needed to advance linkages between near-shore and global ocean models.

DETAILED RECOMMENDATIONS:

#	Action	Point	Status
1.1	Support Development of a White House Science and Technology Presidential Memorandum.	IOOS AC	Complete
1.2	Advance linkages between near-shore and global ocean models.	IOOS RAs	Underway
1.3	Enhanced integration of ocean teams with Unified Forecast System at NOAA.	NOAA	Underway
1.4	Leverage diverse STEM expertise to enhance future workforce. Identify ways that NOAA can be more inclusive in outreach efforts, specifically in coastal and rural areas and communities.	IOOS AC	Ready
1.5	Coordinate Ocean Data Assimilation (research and operational) with EMC to address more ocean expertise with modelers and ocean data assimilation experts.	?	Ready
1.6	Reestablish Climate as an emerging issue that needs attention.	IOOS	Underway
1.7	Explore new programs associated with Smart Coastal Ocean in conjunction with recapitalization plans to replace aging technology with modernized technology to address emerging issues.	SOST	Ready
1.8	Draft a vision of the ocean infrastructure plan going forward (10-15year time horizon aligned with the Ocean Study Board's Ocean Infrastructure 2030 Report).	NOAA	Ready
1.9	Utilize 11 regional data centers and consider further data aggregation.	NOAA	Ongoing
1.10	Develop a central hub for Ocean Acidification and Harmful Algal Bloom to operationalize data and information.	IOOS	Ready
1.11	Advocate for incorporating IOOS into other interagency planning processes including the Ocean Policy Committee.	IOOS	Ready
1.12	Continue to undertake economic valuation processes of observing systems to help better quantify benefits and enhance messaging.	IOOS	Ongoing

Requirements Management for Success and Growth

- A. Create a NOAA Ocean Obs budget roll-up
- B. Create federal non-defense ocean obs budget roll-up
 - a. OMB route vs. Legislative route
- C. Reorganize ocean observing in NOAA to be more effective

- a. Discuss context - ocean obs data from internal and external sources? Emphasis is on harnessing the data, regardless of where it comes from, not the toys that collect them
- D. Position IOOS as the oceanographic operational integrator at NOAA. There are many folks at NOAA -- NDBC, NWS, others-- that are using research streams to fund operational products but it should be IOOS that is the operational "integrator".
- E. SR would like to develop a recommendation that improves the IOOS office's ability to weave together multiple levels of requirements (from national down to regional, in a way that allows management, prioritization, and driving compelling budget requests) that is also manageable for both the IOOS Office and the RAs. Priority on local/regional reqs because they are closer to customers.
- F. IOOS Program should make a detailed list of unfunded requirements.
- G. Draft recommendation in setting up a PAC line (NOS or IOOS) for infrastructure refreshes/servicing---make this recommendation as a FAC.

Creating and Sustaining Strategic Partnerships

The IOOS Advisory Committee investigated relationships across federal agencies, as well as with non-federal partners, and provided recommendations to strengthen and enhance those relationships. These include outreach activities (by IOOS AC members) to provide informational briefings about the Enterprise and explore ways to tighten collaborative efforts. In addition to strengthening existing partnerships, the committee investigated where the IOOS Enterprise can forge strategic alignments with new and unfamiliar communities; and will provide those recommendations to the appropriate bodies. .

IOOS is a distributed system pulling together federal, academic and commercial partners to provide an integrated national ocean observing capability for continental shelves. This partnership model is a strength of IOOS and should be strengthened. Recommendations for enhancing and building new partnerships include:

Maintain/Build on existing partnership models

It is critical to maintain and build on existing partnerships. Aging infrastructure provides an ongoing struggle for IOOS as backbone infrastructure ages out. Exploration of different partnership models to leverage infrastructure from other federal, private and academic partners is critical. Partnerships span from within NOAA and as well as with other agencies (DoD, NASA) and build around themes of interest with a range of proprietary agreements and targeted IOOS investments. Additionally, enhancing academic and private sector partnerships are critical for providing infrastructure and expertise which is core to the evolving IOOS enterprise.

Use partnerships to accelerate innovation

There are private and academic entities that are performing well and available to partner with IOOS. IOOS provides a distributed system well suited to benefit from external partners. Frameworks such as those from National Ocean Partnership Program (NOPP), Ocean Technology Transfer (OTT) program and interagency agreements should be fostered by IOOS.

Leverage non-IOOS data initiatives

IOOS can partner to leverage usage of and development with non-IOOS (big) data initiatives spanning operational (i.e. storm intensity forecasting) to innovation (ie. eco-forecasting) initiatives. Partnerships with entities within NOAA, other agencies (i.e. DoD, NASA) and universities should enhance interactions and integrations with other data initiatives of interest to IOOS functions. These partnerships may complement or supplement themes of interest with a range of agreements and targeted IOOS investments.

DETAILED RECOMMENDATIONS:

#	Action	Point	Status
3.1	Develop best practices document and/or policy guide for data and product buys (e.g. buying hydro data vs. a nautical chart) that encompass all programs and advances successful private partnerships.	NOAA	Complete
3.2	Analyze NOAA initiatives with established partnership models to ensure alignment with IOOS.	IOOS	Ready
3.3	Engage private industries through potential proprietary partnerships to replace aging infrastructure as a potential way to bolster recapitalization efforts.	IOOS AC	Ready
3.4	Execute Ocean Technology Transfer through the National Ocean Partnership Program as a way to leverage support from other agencies and private sources.	NOPP	Ready
3.5	Collaborate with NOAA Big Data Project regarding IOOS contributions to Ecological Forecasting	IOOS, NOAA	Underway

Chapter 4: Recommendations specific to the IOOC

In general, the IOOS Advisory Committee supports the Interagency Ocean Observation Committee (IOOC) as a leader in interagency ocean activities. The IOOC should look beyond immediate agency commitments and missions to develop consensus strategies laying groundwork for future ocean priorities. IOOC members and staff can also help the IOOS AC connect programmatic initiatives to executive requirements, legislative directives, and community recommendations. The IOOC Co-Chairs continue to be a valuable resource with its committee members that play a pivotal role executing the ocean observing initiatives and can leverage them bringing greater attention to their particular agency-based goals. We encourage the IOOC to work closely with other Interagency Working Groups (IWGs) in other thematic areas including Ocean Partnerships, Facilities and Infrastructure, Ocean and Coastal Mapping, Ocean Acidification, and others.

DETAILED RECOMMENDATIONS:

#	Action	Point	Status
4.1	Consider broader topics beyond the taks teams to address critical U.S. government-wide priorities.	IOOC	Ready

4.2	Examine alignment of all the different efforts coming out of OceanObs'19 and how it will align with the UN Decade goals.	IOOC	Ready
4.3	Establish a Societal Indicators Task Team with collaboration from NOAA's Sea Grant, RISA , NOAA's Office of Coastal Management, NOAA's Climate Program Office, and NSF's Arctic Programs.	IOOC	Ready
4.4	Incorporate genomics into the scope of both the corals and marine mammals subgroups of the IOOC Biological Integration and Observation Task Team's efforts.	IOOC	Ready

Conclusion: Charge from Chair, Scott Rayder and Vice Chair, Sara Graves